

Abstract of the disclosure

The present invention realizes the miniaturization of a semiconductor module. The semiconductor module includes a module board having external electrode terminals and a heat radiation pad over a lower surface thereof, a first semiconductor chip incorporating an initial-stage transistor of a high frequency power amplifying device therein, a second semiconductor chip incorporating a next-stage transistor and a final-stage transistor therein, and an integrated passive device which constitutes a matching circuit. At least one of the first semiconductor chip and the second semiconductor chip and the integrated passive device are mounted over an upper surface of the module board in an overlapped manner. The second semiconductor chip is mounted over a bottom of a recess formed in the upper surface of the module board. A plurality of vias which are connected to the heat radiation pad are formed in the bottom of the recess. Over the upper surface of the module board outside the recess, discrete parts such as the first semiconductor chip, resistors, capacitors and the like are mounted. The semiconductor chips and respective parts are sealed with a sealing portion formed over the upper surface of the module board.